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## THE MORE IMPORTANT RECORDS FOR AUGUST

Grasshoppers continued to be the major entomological feature in the Plains and Rocky Mountain States. Second-brood Melanoplus mexicanus Sauss. are appearing generally in Missouri, Nebraska, and the adjoining States.

Egg laying of the Mormon cricket is well advanced or completed in the Great Basin.

The Gulf wireworm was found 112 miles north of the Gulf coast in Mississippi during the month while the sugar beet wireworm was more abundant in Ventura County, Calif., than ever before recorded.

A survey indicates that the white-fringed beetle is lightly infesting about a thousand acres in Jones County, Miss. The infested area in Walton County, Fla., has been found to be somewhat wider than heretofore known.

The variegated cutworm did considerable damage to tomatoes, celery, and other truck crops in Indiana and Michigan.

An outbreak of the garden webworm occurred early in the month in eastern Nebraska, principal damage being done to alfalfa. A very heavy flight of the moths was observed late in the month in Oklahoma.

The hessian fly survey carried on in the West Central States indicates that the fly is at the lowest population level ever recorded.

Heavy losses of late sweet corn and tomatoes by the corn ear worm were reported in the Middle Atlantic and East Central States.

The European corn borer was reported in destructive numbers in Connecticut, Vermont, and New Jersey and on the Eastern Shore of Virginia.

A very heavy population of the potato leafhopper was reported from the East Central States, damaging alfalfa and potatoes. Infestation on potato was so heavy in Wisconsin that practically all fields were brown before the third week of the month.

Peak flights of adult codling moths were reported in the upper Hudson River Valley on August 3; in Delaware on August 11; in Knox County, Ind., on

August 21; in Michigan on August 16; and in Wisconsin on August 15.

First adult of the second brood of plum curculio appeared in Maine on August 20. In Georgia 69 percent of the females started to deposit eggs by August 20.

Heavy infestations of the grape leafhopper were reported from northern Indiana and Ohio.

The walnut caterpillar was very prevalent in southern New England, Middle Atlantic, and East Central States, and southwestward to Oklahoma.

False chinch bug is generally prevalent from Kansas to New Mexico and Nevada.

Very heavy populations of squash bugs were reported to be seriously damaging many cucurbitaceous plants in New York, Virginia, Iowa, Missouri, Nebraska, and Utah.

A rapid increase of boll weevil was reported in the South Atlantic States and in southeastern Texas; however, the season is well advanced and much cotton already made.

The cotton leaf worm has been reported more abundant in Florida than at any time since 1912. The insect was generally reported in small numbers over the greater part of the Cotton Belt.

Cotton flea hopper injury was in general, very low throughout the Cotton Belt.

Heavy losses of cotton in the Imperial Valley, caused by the outbreak of the cotton leaf perforator, occurred during the first 3 weeks in August. The insect was also reported from Arizona.

Fall webworm outbreaks, in some cases of considerable intensity were reported from the North Central, Middle Atlantic, South Atlantic, East Central and Gulf States.

Elms in the New England States were seriously browned by the elm lacebug. This insect was also reported as damaging elms in Florida.

Thousands of acres of forest in Maine have been defoliated by the European spruce sawfly.

A detailed report on screwworm infestation will be found in this number of the Survey Bulletin.

An unusually severe infestation of stableflies is reported from the North Central States.

Brain fever of horses, transmitted by mosquitoes, has become so serious in the North Central States as to glut the market with dead animals at rendering plants.

GENERAL FEEDERS

Grasshoppers (Acrididae)

Indiana. J. J. Davis (August 23): During the past month reports of damage, mostly to garden crops, were received from many different localities. In many sections grasshoppers have been and continue to be very abundant in grassy and weedy areas with much less attack and injury to crops than their numbers would lead one to anticipate. Apparently this condition is due to the continued succulent vegetation in the breeding places, preventing the need of migrating to cultivated crops. The hoppers were most abundant in northwestern and northern Indiana; also in the central-western region east to beyond Lafayette, and in Wells County in northeastern Indiana where the hoppers were damaging young grass as well as garden crops.

C. Benton and W. B. Noble (August 13-24): Adults abundant in many localities of Benton, Tippecanoe, Clinton, and Tipton Counties. Some damage to corn leaves and ears in occasional fields in outside portions next to fence rows, especially in Benton County.

Kentucky. M. L. Didlake (August 24): Grasshoppers of several species, among them Melanoplus differentialis Thos. and Dissosteira carolina L., attacked corn at Eddyville; tobacco, sweetpotatoes, peas, and beans at Bowling Green; and Lespedeza sericea at Water Valley.

Minnesota. A. G. Ruggles (August): Grasshoppers are very abundant in the southern third of the State.

Iowa. H. E. Jaques (August): Grasshoppers are from moderately to very abundant throughout the State.

Missouri. L. Haseman (August 21): Hoppers continue to be abundant especially over most of the western and northern parts of the State. The two-lined hoppers (M. bivittatus Say) are practically gone. M. differentialis is mating and females are carrying mature eggs. The red-legged hopper (M. femur-rubrum Deg.), in central Missouri, is very scarce, while M. mexicanus Scuss. is apparently largely, if not entirely, in the second brood and in places very abundant. Most of them are in the second to fourth instar with a few adults. Carolina locust (D. carolina) was never so abundant as at the present time. The adults are present in swarms on all bare spots or cultivated patches.

Nebraska. M. H. Swenk (August 20): Grasshoppers continue to be the major crop pest. Over 15,000 tons of bait materials have been used. Where the bait has been freely and properly applied the grasshoppers have been brought under control and much of the corn crop has been protected from serious damage. The damage that has taken place is spotted and irregular in distribution, and mostly in areas where the population was exceedingly heavy or control measures inadequate, or both. In the fall of 1935 there was a small and much localized hatching of



M. mexicanus in southeastern Nebraska; late in July 1936 there was a much larger and more widely distributed hatch of this species; and beginning the last week in July of this year, and continuing through August to date, there has been a large and important hatching of this species involving the entire State, but much heavier in the eastern part than in the west. This second hatching of this species is playing a very important role in the late season control program. No second hatching of M. bivittatus or M. differentialis has been observed. An interesting phase of the situation, though not of great economic importance, is the unusual abundance of the lubber grasshopper (Brachystola magna Gir.).

Kansas. H. R. Bryson (August 24): Grasshoppers are not causing as much injury as they were last year at this time. A trip from Manhattan to Jewell County through Riley, Clay, Cloud, Mitchell, Jewell, and Washington Counties revealed the fact that the greater part of this year's injury could not be attributed wholly to the large population of hoppers but rather to the small amount of green vegetation on which to feed. The greater part of the acreage in these counties had been prepared for wheat, forcing the grasshoppers to seek food elsewhere. Pastures likewise offer very little vegetation for the hoppers. The greatest injury observed was in alfalfa fields. Injury to corn silks has been more prevalent than ever reported before.

Oklahoma. F. E. Whitehead (August 20): Grasshoppers in the fields are definitely on the decline. Presumably owing to extremely hot, dry weather, the grasshoppers largely left the alfalfa and cotton fields and are present in weeds, underbrush, along fence rows, and in draws. M. differentialis remains the predominating species.

C. F. Stiles (August 24): Grasshoppers continue to do some damage throughout the central and western part of the State. Prevailing species are M. mexicanus, M. differentialis, and M. bivittatus.

Utah. C. J. Sorenson (August 22): M. bivittatus, M. packardii Scudd., M. femur-rubrum, and M. mexicanus are very abundant in southwest and northwest Cache County.

G. F. Knowlton (August 24): Grasshoppers are damaging ripening tomato fruits in many localities of Davis, Box Elder, and Weber Counties. Large numbers are winged in all areas at this time.

Nevada. G. G. Schweis (August 25): Grasshoppers have moved in from waste lands to cultivated crops in Douglas County, necessitating control. The species involved are Camula pellucida Scudd., M. mexicanus, and Oedeleonotus enigma Scudd.

MORMON CRICKET (Anabrus simplex Hald.)

Nebraska. M. H. Swenk (August 20): A specimen of Mormon cricket was sent in from Grant County, in west-central Nebraska, on August 9, with the statement that the insect is quite numerous in that locality.

Wyoming. Salt Lake Tribune (August 22): There are billions of crickets in those portions of the Yellowstone National Park where tourists seldom visit.

Nevada. G. G. Schweis (August 25): The egg survey for Mormon crickets in Elko, Humboldt, Eureka, and Lander Counties has been completed for the year and the number of eggs indicates that there will be a heavy infestation over a wide area next year.

#### WIREWORMS (*Elateridae*)

Mississippi. K. L. Cockerham (August 9): One adult, *Heteroderes laurentii* Guer., was found August 9 by J. P. Kislanko at Laurel, Jones County. This is a new locality record and extends the spread 112 miles north from the Gulf coast.

California. R. E. Campbell (July 23): Quoting M. D. Miller, assistant agricultural agent, Ventura County: "Wireworm damage in Ventura County has been more widespread and severe than any of the oldest inhabitants can recollect. Farms which have never been previously infested show a surprisingly heavy damage this year."

#### A WHITE GRUB (*Phyllophaga ephilida* Say)

Maryland. E. N. Cory (August 6): May beetles are severely injurious in Queen Annes, Talbot, and Saint Marys Counties.

#### GREEN JUNE BEETLE (*Cotinis nitida* L.)

Georgia. O. I. Snapp (August 1): The green June beetle is unusually abundant at Fort Valley, central Georgia, feeding on ripe peaches. Many fruits were ruined.

T. L. Bissell (August 9): Green June beetles have been swarming in abundance for the last 2 days at Griffin. They evidently emerged after showers on August 7, which had followed a dry period. Beetles fly over grass and up into trees as long as the sun shines. I have never before seen such a flight of this species. Individual beetles have been out some weeks.

Kentucky. M. L. Didlake (August 24): Green June beetles destructive to peaches in Lexington.

#### JAPANESE BEETLE (*Popillia japonica* Newm.)

New England and New York. E. P. Felt (August 14): The Japanese beetle has increased greatly in southwestern New England and southeastern New York and has been found in some numbers in several localities in the southern Berkshires of Massachusetts.

Connecticut. W. E. Britton (August 21): The Japanese beetle is gradually becoming more prevalent. It is present in all the cities and larger

villages of the State, but is not yet found throughout the open country districts. Heavy infestations occur in Branford, Bridgeport, Darien, Greenwich, Hartford, New Canaan, New Haven, New London, Putnam, Ridgefield, and Stamford.

New York. N. Y. State Coll. Agr. News Letter (August 16): Japanese beetle has been troublesome in sections of Westchester County where it has never been before.

Delaware. L. A. Stearns (August 24): Infestation for the present year about ended; but few beetles now in evidence except on especially susceptible hosts.

#### ASIATIC GARDEN BEETLE (Autoserica castanea Arrow)

Connecticut. W. E. Britton (August 21): This beetle is rapidly becoming more prevalent in Connecticut. During the past month adults have been received from Darien, Greenwich, Hamden, and Norton, and three lots from New Haven.

#### WHITE-FRINGED WEEVIL (Naupactus leucoloma Boh.)

Florida. J. R. Watson (August 23): Extensive scouting in Walton County has resulted in somewhat widening the known infested area.

Mississippi. C. Lyle (August 24): The first specimens of the white-fringed beetle in Mississippi were sent to this office from Laurel on August 6. Inspectors have found that about 1,000 acres in Jones County are lightly infested. The infestation is largely confined to the city limits of Laurel, and so far it has not been found in the farming district.

#### CUTWORMS (Noctuidae)

Indiana. J. J. Davis (August 23): During the month considerable damage in central Indiana was observed by the yellow-striped armyworm (Prodenia ornithogalli Guen.) and the variegated cutworm (Lycophotia margaritosa saucia Hbn.) eating into the green fruits of tomato. In all cases coming under our observation the infestations occurred along borders of fields or in fields which were grassy and weedy. What was apparently the variegated cutworm was reported eating into the heads of cabbage August 10 at Berne.

Michigan. R. Hutson (August 17): The variegated cutworm attacked celery in the vicinity of Inlay City during the first week of August. The infestation embraced practically the entire celery-growing district in that vicinity, but the cutworm did not occur in other celery-growing districts.

Nebraska. M. H. Swenk (August 20): A Gage County correspondent reported the yellow-striped armyworm to be present on his flowers on July 26.

Arizona. C. D. Lebert (August 13): During the last of July and the first of August in the East Verde area, northeast of Payson, there was a rather



heavy infestation of the armyworm (Cirphis unipuncta Haw.) and the variegated cutworm. They were working together on alfalfa, garden crops, and young fruit trees. Rather severe damage was observed.

California. A. E. Michelbacher (August 13): In certain scattered localities through central California the yellow-striped armyworm (Prodenia praefica Grote) has caused some damage to the developing fruit.

FALL ARMYWORM (Laphygma frugiperda S. & A.)

Georgia. T. L. Bissell (August 17): Worms are found shredding the leaves of young corn at Griffin, central Georgia. This is the first injury noticed this year.

VELVETBEAN CATERPILLAR (Anticarsia gemmatilis Hbn.)

Florida. J. R. Watson (August 23): Peanuts in Alachua County have in many cases been severely attacked by the velvetbean caterpillar.

Louisiana. B. A. Osterberger (August 25): We have records of activity from Napoleonville to Franklin, Crowley, Baton Rouge, and Hammond. The present generation is developing rapidly and moths for the next generation are beginning to emerge and lay eggs.

GARDEN WEBWORM (Loxostege similalis Guen.)

Nebraska. M. H. Swenk (August 20): The large flights of moths occurring at Lincoln in mid-July resulted in an outbreak of webworms during the week of July 28 to August 3. This outbreak was most severe in Richardson County, where damage was done in the alfalfa fields and armies of the webworms crawled into occupied houses. Damage was reported north as far as Butler, Madison, and Antelope Counties, chiefly in the alfalfa fields, but also in cornfields and pastures.

Oklahoma. C. F. Stiles (August 24): Sunday night I saw one of the heaviest flights of the moths that I have ever seen. Thousands were flying around the lights.

WHITE-LINED SPHINX (Sphinx lineata L.)

Wyoming. Margaret Greenwald (August 12): Moths common in alfalfa fields, feeding on the blossoms and on the blooms of bull thistle at Powell, northwestern Wyoming.

CEREAL AND FORAGE - CROP INSECTS

WHEAT AND OTHER SMALL GRAINS

ARMYWORM (Cirphis unipuncta Haw.)

Maine. J. H. Hawkins (August 7): Fields of oats and grass were seriously injured in central and north-central Maine. Oats were especially damaged, in some cases whole fields being destroyed or injured to such

an extent that they were not harvested.

Minnesota. K. A. Kirkpatrick (August 24): Armyworms have been quite abundant in several places in Hennepin County, one farmer reporting 30 percent loss on his grain.

Arizona. C. D. Lebert (August 13): During the last of July and the first of August in the East Verde area, northeast of Payson, there was a rather heavy infestation.

California. A. H. Clark (July): Specimens were sent from Los Angeles with the statement that moths occurred in thousands in a small home garden. (Det. by C. Heinrich.)

#### HESSIAN FLY (Phytophaga destructor Say)

General. J. R. Horton (June): A hessian fly survey conducted shortly before harvest last June indicates that the fly population has now reached its lowest general level in all the years of systematic record for the region comprising the States of Kansas, Missouri, Nebraska, and Oklahoma. At the present time infestation is, on the average, below the 10 percent level in all portions of these States. Maximum infestation in individual samples ranged from 40 percent downward to 24 percent and occurred in the southern and east-central portions of Missouri, particularly in Greene, Dallas, Scott, and Perry Counties and, in lesser degree, in Crawford, Osage, and Sainte Genevieve Counties. In other States no maxima worthy of special mention occurred, the highest individual-sample infestations being 18 and 22 percent in northeastern Kansas and southeastern Nebraska, respectively.

#### EUROPEAN WHEAT STEM SAWFLY (Cephus pygmaeus L.)

Ohio. E. J. Udine (July): Heavy infestations of the wheat sawfly in eastern Ohio. Actual damage by it was less than usual owing to a delayed development of the larvae which enabled harvesting to occur before the culms were severed.

#### CORN

#### CHINCH BUG (Blissus leucopterus Say)

Indiana. C. Benton and W. B. Noble (August 13-24): A survey in west-central Indiana covering 20 cornfields per county and 24 stalks per field showed the following average infestations of combined adults and nymphs:

County	: Average bugs per stalk	: Maximum bugs per stalk
	Number	Number
Benton.....	2	75
Tippecanoe....	2	51
Clinton.....	1.5	50
Tipton.....	0.5	75

<sup>1/</sup> In heaviest infested field.

The proportion of nymphs to adults increased from about 4 to 7 at the beginning of the survey to about 5 to 3 at the end. The majority of the nymphs belonged to the first three instars. Foxtail grass is abundant in some fields and moderately infested with nymphs.

Kansas. H. R. Bryson (August 24): Chinch bugs are scarce in Kansas.

Oklahoma. C. F. Stiles (August 24): Chinch bugs have also been reported in damaging numbers throughout the central part of the State. The infestation is very light on the western side of the State.

CORN EAR WORM (Heliothis obsoleta F.)

New York. N. Y. State Coll. Agr. News Letter (August 16): Many sweet corn growers are experiencing heavy losses in Westchester County.

New Jersey. E. Kostal (August 25): This species is very seriously damaging late sweet corn in Morganville, Monmouth County.

Maryland. L. P. Ditman (August 23): Corn ear worm developed earlier this year than usual. Injury was especially heavy on tomatoes. Infestation fell off during the latter part of July and first of August, but it became severe during the past 10 days.

Ohio. T. H. Parks (August 26): While injury was very severe to early maturing sweet corn and to early tomatoes, its presence in mid-season corn is not much above average. We look for a heavy infestation in late sweet corn.

Indiana. J. J. Davis (August 23): The second brood has been very abundant, attacking corn, but the infestation in tomatoes by this brood has been negligible except where they adjoin cornfields. The third brood is just appearing and is showing up slightly more on tomatoes than the second brood.

E. V. Walter and C. Benton (August 13-24): Infestations in sweet corn at Lafayette have been from 20 to 50 percent, with the majority of worms nearly full grown. Infestations in field corn averaged 10 to 20 percent.

Illinois. W. P. Flint (August 23): To date the corn ear worm has been only moderately abundant, though a heavy late brood is developing.

Missouri. L. Haseman (August 21): While most fields of corn show heavy infestation, sweet corn at Columbia is much less severely infested than one might have expected from the severe infestation in the tassels of corn earlier and in early tomatoes. At present very few worms are showing up in tomatoes in central Missouri.

Utah. G. F. Knowlton (August 24): Moths are found in small numbers at trap lights in northern Utah. Damage to sweet corn is rather heavy in northern Utah.

Nevada. G. G. Schweis (August 25): Damage to sweet corn seems to be decidedly less than a year ago.



EUROPEAN CORN BORER (Pyrausta nubilalis Hbn.)

- Vermont. H. L. Bailey (August 20): For the first time in Vermont borers have been found in considerable numbers in potato stalks in Rutland and Chittenden Counties. Many larvae apparently full grown at Ira, Rutland County, southwestern Vermont.
- Connecticut. W. E. Britton (August 23): Larvae of the second generation are now very prevalent in the New Haven region and cause much damage to the ears of sweet corn and the shoots and buds of dahlias.
- New Jersey. E. Kostal (August 25): This species is very seriously damaging late sweet corn at Morganville, Monmouth County.
- Virginia. H. G. Walker and L. D. Anderson (August 28): This has been a very favorable year for the development of the European corn borer on the Eastern Shore of Virginia. The second generation of borers has done considerable damage in some fields of early corn. One stalk was dissected which contained 30 full-grown larvae or pupae. Moths of the third generation are now in flight and over 350 eggs have been counted on some plants. A great many plants in a field of corn near Onley have over 100 eggs now and eggs are still being deposited.
- Italy. H. D. Smith (July 30): Our Italian field assistant reports very heavy infestation of corn borer in the Province of Mantova, heaviest in years. About every plant infested. Corn exceptionally early this year.

SOUTHERN CORN ROOTWORM (Diabrotica duodecimpunctata F.)

- Indiana. J. J. Davis (August 23): Since our report a month ago, records of injury to corn reported from the northwestern quarter of the State. No reports received since August 1.
- C. Benton and W. B. Noble (August 13-24): Adults of D. duodecimpunctata are unusually abundant everywhere on corn in Benton, Tippecanoe, Clinton, and Tipton Counties, mostly behind the leaf sheaths and in the silk. In Benton County D. longicornis Say was abundant and largely replaced D. 12-punctata.
- Kentucky. M. L. Didlake (August 24): Southern corn rootworm damaged corn in central Kentucky.
- Missouri. L. Haseman (August 21): During August they have been very abundant in central Missouri. These are the adults from the rootworms which were so destructive during July, especially in the central part of the State.

CORN LANTERN FLY (Peregrinus maidis Ashm.)

- Florida. J. R. Watson (August 23): The corn lantern fly about ruined late-planted corn in Alachua and other counties.



ALFALFA

ALFALFA WEEVIL (Hypera postica Gyll.)

California. A. E. Michelbacher (August 13): In the San Joaquin Valley on August 11 the highest average number of larvae collected to the 100 sweeps of an insect net was 23, while the adult count was 17. At Pleasanton no larvae or adults were collected while in the San Francisco Bay area the highest larval count to the 100 sweeps was 28.

POTATO LEAFHOPPER (Empoasca fabae Harr.)

Ohio. E. W. Mendenhall (August 12): The County agent of Guernsey County reports severe damage to alfalfa. Entire fields have been ruined.

Indiana. J. J. Davis (August 23): The past 2 months have witnessed one of the most destructive attacks on alfalfa that we have observed since our earliest records over 20 years ago. The infestation was general throughout the State. The observations reported last month indicated much greater injury in the southern half of the State.

Kentucky. M. L. Didlake (August 24): Destructive to alfalfa in central and western Kentucky.

ALFALFA CATERPILLAR (Eurymus eurytheme Bdv.)

Arizona. C. D. Lebert (August 13): In the Salt River Valley near Phoenix, Mesa, and Gilbert there has been severe injury to alfalfa by the alfalfa caterpillar. Some fields in the Mesa-Gilbert area are almost completely defoliated. Thousands of the butterflies have been seen in the valley. Every tourist coming through the valley is carrying a display on the radiator of his motor car.

PLANT BUGS (Lygus spp.)

Utah. C. J. Sorenson (August 22): L. elisus Van D. and L. elisus hesperus Knight are very abundant in alfalfa fields throughout the State.

VETCH

VETCH BRUCHID (Bruchus brachialis Fabricius).

South Carolina. W. C. Nettles (August 23): A serious infestation of vetch seed reported from York County (central), a new county in our list for the insect.

SUGARCANE

SUGARCANE BORER (Diatraea saccharalis F.)

Louisiana. B. A. Osterberger and A. L. Dugas (August 20): Infestation in the Tech section of the sugar belt in southern Louisiana is light with the exception of a few isolated heavily infested areas. Many of the eggs collected were heavily parasitized with Trichogramma.

RICE

SUGARCANE BEETLE (Euetheola rugiceps Lec.)

Louisiana. W. A. Douglas (August 21): Injury to rice is rather serious. After water has been drained from fields the beetles go in and gnaw the stalks at or just beneath the surface of the soil. Farmers have been forced to cut rice before it was mature. In some fields 28 per cent of the stalks are being gnawed. This has not only reduced the yields but has prevented maturity of some of the rice that will be threshed and lowered the grade on account of chalkiness.

B. A. Osterberger (August 18): Last night on the main business street of Baton Rouge several adults were noticed flying around show-window lights.

F R U I T I N S E C T S

SHOT-HOLE BORER (Scolytus rugulosus Ratz.)

Ohio. T. H. Parks (August 26): Following serious defoliation of cherry trees by cherry leaf spot, shot-hole borers are causing more inquiries than usual from all parts of the State.

Indiana. J. J. Davis (August 23): Damage to apricot reported from Anderson on August 10.

Georgia. O. I. Snapp (August 20): The shot-hole borer is rather scarce at Fort Valley, owing in part, to the removal of neglected and abandoned orchards and to the better care of orchards.

A LEAF-FOOTED BUG (Leptoglossus clypealis Heid.)

Nebraska. M. H. Swenk (August 20): Reported to be working on currants in Sioux County on August 16 and on wild plums in Hooker County on August 18. This is the first report of damage by this species.

PEAR SLUG (Eriocampoides limacina Retz.)

Nevada. G. G. Schweis (August 25): Pear slugs are damaging pear and cherry trees near Reno.

APPLE

CODLING MOTH (Carpocapsa pomonella L.)

New York. N. Y. State Coll. Agr. News Letter (August 16): Showers the past week have slowed up second-brood activity in Niagara County. In the lake zone but few eggs could be found on pears and very few fresh entrances. Wormy fruit on the ground and stings around the lower parts of the trees also show that the tops are being missed. In Wayne County occasional

second-brood entrances are beginning to show up but are still hard to find. An occasional late sting is showing up in some orchards in Orange County, but the injury is not great enough to necessitate special applications by growers.

D. W. Hamilton (August 24): At Poughkeepsie peak activity of first-brood moths, as indicated by bait traps, occurred on the night of August 3. Moths continued to appear in bait traps until August 21. Since then the temperature has been too low for moth activity. Bands examined on August 16 had very few pupae present. Commercial orchards appear to have a lighter infestation than a year ago.

Delaware. L. A. Stearns (August 24): Second-brood injury general and about average for this date. Peak flights of first-brood moths, possibly second-brood moths, were recorded on the nights of July 13, 16, and 25, and August 11.

Virginia. A. M. Woodside (August 23): At Staunton bait-pail catches reached a rather high point a month ago, and have continued high since, with minor fluctuations. The infestation of fruit is about the same as at this date last season.

Georgia. C. H. Alden (August 23): Most of the larvae now leaving the fruit are going into hibernation at Cornelia. There is very little moth emergence or egg deposition. The trees are well fruited and well-sprayed orchards are exceptionally free of injury.

Indiana. L. F. Steiner (August 25): As indicated by bait-trap captures, second-brood adult activity reached its peak in three orchards in Knox County (southwestern Indiana) on August 21, 2 days later than in 1936. Although the second brood caused severe damage in many orchards, a higher percentage than usual of larvae are hibernating, therefore the third brood is expected to be less destructive than normal.

Illinois. W. P. Flint (August 23): The third brood is just beginning to hatch in southern Illinois. The late second brood is still abundant in the central part of the State. On the whole, this insect will cause more damage than it did in 1936.

Kentucky. M. L. Didlake (August 24): Codling moth is unusually abundant over the State.

Michigan. R. Hutson (August 21): Second-brood codling moth reached its first peak during the period July 23 to August 3. Heavy flight of moths took place on August 16 and 17.

Wisconsin. C. L. Fluke (August 23): Second brood more active than for many years in Wisconsin. Bait traps caught a greater number at Gays Mills (Crawford County) than have been caught since the laboratory was established in 1929. First peak at Gays Mills on August 1; maximum peak, August 15. At Sturgeon Bay (Door County) first peak on August 14.



Minnesota. K. A. Kirkpatrick (August 24): Moderately abundant.

Missouri. L. Haseman (August 21): The broods have been very much upset, probably owing to the peculiar weather when the moths from overwintering larvae were emerging. Whereas normally second-brood moths emerge in July, this year they continued to emerge until about the middle of August, thus overlapping with early third-brood moths. Second-brood larvae have been especially noticeable in central Missouri since about August 10. We may have only a partial third-brood of moths and larvae though in northwestern Missouri third-brood moths have been emerging in increasing numbers since August 15.

Nevada. G. G. Schweis (August 25): Injury to apples and pears is prevalent in Washoe County.

YELLOW-NECKED CATERPILLAR (Datana ministra Drury)

New Jersey. E. Kostal (August 25): This species is more prevalent than at any time during the last 4 years. Damage is moderate to severe at Morganville, Monmouth County.

Ohio. E. W. Mendenhall (August 18): Trees are nearly defoliated in an apple orchard north of Zanesville.

RED-HUMPED CATERPILLAR (Schizura concinna S. & A.)

Michigan. R. Hutson (August 21): Reported from Lansing and Dunbar.

FLATHEADED APPLE TREE BORER (Chrysobothris femorata Oliv.)

Indiana. J. J. Davis (August 23): Destructive to quince trees at Evansville on August 18.

Nebraska. M. H. Swenk (August 20): Complaints of damage to fruit and shade trees continue to be received.

Kansas. H. R. Bryson (August 24): Borers continue to cause injury to weakened trees and shrubs.

Oklahoma. F. E. Whitehead (August 20): Numerous reports are still coming in concerning injury. The adult population has declined during the month and is now very low.

ROUNDHEADED APPLE TREE BORER (Saperda candida F.)

Missouri. L. Haseman (August 21): Abundant and the larvae are about one-fourth grown but not doing the damage they did a year or two ago.

BUFFALO TREEHOPPER- (Cercsa bubalus F.)

Michigan. R. Hutson (August 21): The buffalo treehopper began depositing eggs August 1 in the vicinity of Coloma, Eau Claire, and Watervliet.



APPLE MAGGOT (Rhagoletis pomonella Walsh)

Connecticut. P. Garman (August 20): Early fruit seriously infested in some orchards in New Haven County.

New York. N. Y. State Coll. Agr. News Letter (August 16): Considerable apple maggot showing up in Orange County.

PEACH

PLUM CURCULIO (Conotrachelus nemophar Hbst.)

Maine. F. H. Lathrop (August): At Monmouth, Kennebec County, larvae were leaving dropped apples in large numbers during the latter half of July. The numbers decreased greatly after the first week in August. The first adults of the new brood appeared in cages August 20. Damage to fruit in commercial apple orchards is more pronounced than usual.

Georgia. O. I. Snapp (August 20): The infestation continues lighter than that of an average year at Fort Valley. Adults are scarce in most orchards. Sixty-nine percent of the first-generation females have started to deposit second-generation eggs, which is more than usual.

C. H. Alden (August 23): No emergence of second-generation beetles to date in insectary cages at Cornelia.

Missouri. L. Haseman (August 21): At Columbia between August 10 and 20 plums have been infested with larvae, probably second-brood larvae, as most first-brood larvae are normally out of fruits by July 15.

ORIENTAL FRUIT MOTH (Grapholitha molesta Busck)

Virginia. A. M. Woodside (August 23): Infestation of fruit has been high at Staunton.

South Carolina. O. L. Cartwright (August 23): Somewhat worse than usual on the peach crop recently harvested.

Georgia. O. I. Snapp (August 1): Of 3,984 Elberta peaches carefully examined this year, not one was found to be infested.

Mississippi. C. Lyle (August 24): Larvae were found in Phytinia twigs at Jackson on July 30. Injured peach twigs have been received from Blue Mountain, Charleston, and Gautier, and from the Durant and Meridian districts.

Kentucky. M. L. Diddleke (August 24): Injury less noticeable than in recent years.

PEACH BORER (Conopia exitiosa Say)

Georgia. O. I. Snapp (August 20): The peak of cocooning.

has just occurred in Fort Valley, central Georgia, which is about the normal time. The infestation is moderate.

Kentucky. M. L. Didlake (August 24): Destructive at Louisville and Centertown,

LESSER PEACH BORER (Synanthedon pictipes G. & R.)

Georgia. O. I. Snapp (August 20): Fall-brood moths are depositing eggs at Fort Valley, central Georgia.

PEACH TWIG BORER (Anarsia lineatella Zell.)

Utah. C. J. Sorenson (August 22): Peach twig borer moderately abundant in Utah and Davis Counties on peach fruit.

CHERRY

UGLY-NEST CATERPILLAR (Cacoecia cerasivorana Fitch)

Maryland. E. N. Cory (July 31): Several reports from Garrett County recently of browsing of wild cherry foliage. Specimens from shad bush proved to be the ugly nest.

A SAWFLY (Neurotoma fasciata Nort.)

West Virginia. L. M. Peairs (August 13): Specimens of larvae from cherry received for identification. They make a large webbed nest which accumulates much floss. They are very numerous in several sections, mainly high locations, on Prunus serotina. Numerous in Preston and Monongalia Counties.

RASPBERRY

ROSE SCALE (Aulacaspis rosae Bouche)

Indiana. J. J. Davis (August 23): Reported destructively abundant on raspberry at Indianapolis July 28.

GRAPE

GRAPE LEAFHOPPER (Erythroneura comes Say)

Ohio. T. H. Parks (August 26): More abundant than usual. Some growers, who in previous years have not found it necessary to spray for leafhoppers, have been doing so this year.

Indiana. J. J. Davis (August 23): Has been reported destructively abundant from all parts of the State, especially from the northern half.

Mississippi. C. Lyle (August 24): The grape leafhopper was found on grapes at Greenwood during the month.

Utah. G. F. Knowlton (August 24): Damage to Virginia creeper and certain varieties of grapes is very severe in many localities.

California. C. S. Morley, Kern County Monthly News Letter (August 6): Grape leafhoppers are doing considerable damage to grapevine.

GRAPE BERRY MOTH (Polychrosis viteana Clem.)

Delaware. L. A. Stearns (August 28): Less abundant than usual in Kent County.

New York. N. Y. State Coll. Agr. News Letter (August 16): In Orange County a little work of the larvae has been noted.

Michigan. R. Hutson (August 17): Grape berry moth is becoming noticeable in the vicinities of Paw Paw, Saint Joseph, and South Haven.

GRAPE SAWFLY (Erythraepides pygmaea Say)

Virginia. A. M. Woodside (August 23): Several colonies of larvae, probably E. pygmaea, have been observed on grape at Staunton.

GRAPE TOMATO GALL (Lasioptera vitis O. S.)

New York. E. P. Felt (August 14): Reported injuring grapevines at Farmingdale, Long Island.

BLUEBERRY

BLUEBERRY MAGGOT (Rhagoletis pomonella Walsh)

New Jersey. E. Kostal (August 25): Infestation of native berries in bogs around Morganville is light and late in developing, possibly due to almost complete absence of the crop in 1935 and 1936. The crop this year is very heavy and the damage moderate.

PECAN

PECAN NUT CASEBEARER (Acrobasis caryae Grote)

Texas. C. B. Nickels (August 14): Extensive counts made in six orchards in central Texas indicate that the first generation destroyed approximately 30 percent of the pecan crop. Many nuts dropped before infestation counts were made. We estimate that at least 40 percent of the pecan crop was destroyed by this insect.

PECAN WEEVIL (Curculio caryae Horn)

Georgia. T. L. Bissell (August 10): The pecan weevil is rather slow in emerging. Today we jarred three weevils from three trees that have been heavily infested in previous years at Milner.

EUROPEAN FRUIT LECANIUM (Lecanium corni Bouche)

Texas. C. B. Nickels (August 14): Widely distributed on pecan in central Texas. Infestation severe enough to cause economic injury has been observed on only a few trees.

WALNUT

WALNUT CATERPILLAR (Datana integerrima G. & R.)

Connecticut. W. E. Britton (August 23): Our attention has been called to the presence of this insect on black walnut and butternut in several places, and specimens have been received from Hamden and South Meriden.

New York. R. E. Horsey (August 13): Feeding on black walnut, along a roadside south of Rochester. Little damage.

New Jersey. E. Kostal (August 25): A few colonies noted for the first time in 3 years at Morganville. Damage moderate.

Ohio. E. W. Mendenhall (August 5): Many walnut trees are entirely defoliated in central Ohio.

Indiana. J. J. Davis (August 23): Have been reported abundant during the last month in many localities in northern Indiana.

Illinois. W. P. Flint (August 23): This insect has been more abundant in the State than in the last 2 years. The second brood is now in full swing over the central part of the State.

Michigan. R. Hutson (August 21): Reported from Dunbar.

Wisconsin. C. L. Fluke (August 23): More abundant this year than usual over most of the State; particularly numerous in the western counties.

Missouri. L. Haseman (August 21): A second brood has been hatching since about August 15 in central Missouri and some trees have one or more colonies on almost every limb, especially the lower limbs. This moth is usually single brooded, but a second brood has appeared this year.

Oklahoma. F. E. Whitehead (August 20): The first brood severely defoliated a high percentage of the pecan trees throughout most of the State. The second brood was very threatening 10 days ago but has failed thus far to develop in serious numbers.

CITRUS

COTTONY-CUSHION SCALE (Icerya purchasi Mask.)

Louisiana. I. J. Becnel (August 25): Light infestations were found on citrus trees near Triumph.



CITRUS WHITEFLY (Dialeurodes citri Ashm.)

Mississippi. C. Lyle (August 24): Reported on ornamentals at Meridian and Durant.

Louisiana. I. J. Becnel (August 25): Chinaberry trees in Plaquemines Parish are heavily infested. Nymphs are numerous on citrus trees throughout the parish.

CITRUS RUST MITE (Phyllocoptes oleivorus Ashm.)

Florida. J. R. Watson (August 23): Somewhat more serious during the last 2 months than usual. This is probably correlated with the dry weather in June and July, which hindered the development of the entomogenous fungi.

Louisiana. I. J. Becnel (August 25): Light infestations in several groves near Buras.

Texas. N. C. Berry (August 7): Damage in the Rio Grande Valley is about normal. Good control is being obtained wherever spraying and dusting are practiced.

CAMPHOR TREE

AVOCADO RED MITE (Paratetranychus yothersi McG.)

Florida. J. R. Watson (August 23): With the coming of more general rains in August the worst infestation we have known of the camphor red soldier has largely subsided.

FIGS

BEETLES (Coleoptera)

California. H. C. Donohue and G. H. Kaloostian (July 19): The fallen first-crop mission figs at Fresno in the San Joaquin Valley were examined on July 11 and found to be heavily infested by adults of Hymenorus nacer Csy. Other insects noted and recorded for the first time as feeding on fallen figs included: Cnemeplatia sericea Horn, Laemophloeus ferrugineus Steph., and Typhaea fumata L.

TRUCK - CROP INSECTS

BLISTER BEETLES (Meloidae)

Connecticut. W. E. Britton (August 23): Unidentified blister beetles have been reported as injuring dahlia and aster in Colchester. Specimens of Epicauta marginata F., taken feeding on beet and spinach, were received from Niantic.

Georgia. T. L. Bissell (August 10): At Milner, central Georgia, E. vittata F. is damaging a small patch of tomatoes by eating the foliage.

O. I. Snapp (August 20): The striped blister beetle is abundant at Fort Valley, feeding especially on soybeans and pigweed.

Indiana. J. J. Davis (August 6): The black blister beetle (E. pennsylvanica Deg.) is reported damaging potato at Michigan City, in the extreme north-western part of the State.

G. E. Gould (August 24): Several species of blister beetles are unusually abundant and are stripping the foliage from potatoes, tomatoes, beets, and Swiss chard. The black blister beetle is causing much damage to flowers.

Illinois. W. P. Flint (August 23): Several species are very abundant in the central part of the State. They are so numerous that they will probably aid in controlling grasshoppers this fall.

Kentucky. M. L. Didlake (August 24): Blister beetles, E. marginata, E. vittata, and Macrobasis unicolor Kby., did widespread damage to tomatoes, beans, potatoes, and other garden crops and to alfalfa in western Kentucky.

Nebraska. M. H. Swenk (August 20): Many reports of damage to garden plants, especially potato and tomato, were received, chiefly from Lancaster, Thayer, and Nuckolls Counties.

Kansas. H. R. Bryson (August 24): Blister beetles are causing the usual amount of damage. Garden crops suffer most.

Louisiana. B. A. Osterberger, L. O. Ellisor, and S. S. Sharp (August 20): In the vicinity of Jeanerette, southern Louisiana, E. vittata was found seriously injuring soybeans. In other sections it has been found on alfalfa, as well as on soybeans.

Utah. G. F. Knowlton (August 9): Black blister beetles are abundant and damaging alfalfa blossoms at Petersboro and Smithfield, in Cache County.

PALE-STRIPED FLEA BEETLE (Systema blanda Melsh.)

Kentucky. M. L. Didlake (August 24): Have caused considerable damage to seeding alfalfa in the Bluegrass Region during the first 2 weeks of August. Also common on potatoes and beans.

CARROT BEETLE (Ligyris gibbosus Deg.)

Kansas. H. R. Bryson (August 24): Large numbers of beetles observed at lights during the last week. Observed killing marigolds in Jewell County.

FALSE CHINCH BUG (Nysius ericae Schill.)

Kansas. H. R. Bryson (August 24): Abundant at Coldwater, Ottawa, and Topeka.

Oklahoma. C. F. Stiles (August 24): Very numerous during the last month. Some complained that they came through the screens and were annoying at night.

New Mexico. W. B. Rogers (August 14): Has just recently been noted at Roswell. So far the damage has been light.

Utah. G. F. Knowlton (August 2): Abundant in many parts of Utah and reports of damage to garden crops have been received.

Nevada. G. G. Schweis (August 25): An outbreak was reported on grain in White Pine County.

TARNISHED PLANT BUG (Lygus pratensis L.)

Indiana. G. E. Gould (August 24): Moderately abundant on celery and potatoes grown on muck soil.

CHANGA (Scapteriscus vicinus Scudd.)

Florida. J. R. Watson (August 23): Causing damage to newly planted seedbeds in many parts of the State.

NORTHERN MOLE CRICKET (Gryllotalpa hexadactyla Perty)

Nebraska. M. H. Swenk (August 20): Specimens were sent in from Dixon, Franklin, and Garden Counties.

POTATO AND TOMATO

COLORADO POTATO BEETLE (Leptinotarsa decemlineata Say)

Virginia. H. G. Walker and L. D. Anderson (August 23): A very heavy infestation occurred in several small home gardens in Norfolk during the latter part of July.

Utah. G. F. Knowlton (August 24): Populations have been light in the Hooper-Sunset area.

FLEA BEETLES (Epitrix spp.)

Vermont. H. L. Bailey (August 24): The puncturing of potato leaves by E.

cucumeris Harr. indicates greater abundance throughout the State than was reported in the last number of the Survey Bulletin.

Kentucky. M. L. Didlake (August 24): E. fuscula Crotch is injurious to second-crop potatoes.

Utah. G. F. Knowlton (August 24): Potato flea beetle injury has been less severe than it was in 1936.

#### CORN EAR WORM (Heliothis obsoleta F.)

South Carolina. F. Sherman (August 23): Worminess of tomato fruits has greatly decreased recently, in line with our repeated observations that it is worse in early season, before corn is in full silk.

California. A. E. Michelbacher (August 13): At present not a great deal of tomato fruit in middle-central California is infested. Harvest of the crop is just beginning. An examination of the green developing fruit in the different districts showed a range of from 0 to 8 percent in infestation.

#### HORNWORMS (Protoparce spp.)

Virginia. H. G. Walker and L. D. Anderson (August 28): In general the tomato hornworm has been rather scarce in most tomato fields around Norfolk, and on the Eastern Shore of Virginia, but at least one field of tomatoes near Norfolk was severely injured.

Indiana. J. J. Davis (August 23): Large green tomato worms have been unusually abundant in many sections of the State, not only defoliating plants but eating into fruits. The heaviest infestations were reported on August 7 in La Porte County, in the extreme northern end of the State.

Minnesota. G. B. Hildie (August 10): Hornworm, tobacco or tomato, moderately abundant.

California. A. E. Michelbacher (August 13): Hornworms are doing little damage to tomatoes. First-generation moths are emerging in large numbers and in the near future there may be an increase in damage.

#### STALK BORER (Papaipema nebris nitela Guen.)

Indiana. J. J. Davis (August 23): Reported damaging tomato plants at West Baden during the last month.

#### POTATO LEAFHOPPER (Empoasca fabae Harr.)

Vermont. H. L. Bailey (August 24): Less abundant than usual in most potato fields throughout the State.

Ohio. T. H. Parks (August 26): Have been more abundant than usual and in central Ohio have cut short the yield of late potatoes. Some plantings



showed the tops dead by mid-August.

Wisconsin. C. L. Fluke (August 21): Farmers in southeastern counties report that the leafhopper is so numerous as to be impossible to check with sprays. Nearly all fields brown at this date.

Tennessee. G. M. Bentley (August): Has been prevalent where Irish potatoes have been grown.

#### SLUGS (*Mollusca*)

Virginia. A. M. Woodside (August 23): Slugs are doing considerable damage to tomatoes in some local gardens of Staunton by rasping holes in the fruit which is near or in contact with the soil. In a few gardens practically all of the tomatoes were so damaged.

#### BEANS

##### MEXICAN BEAN BEETLE (*Epilachna varivestis* Muls.)

Georgia. O. I. Snapp (August 20): Increased rapidly during the last month at Fort Valley, central Georgia, and the infestation is nearly up to that of an average year.

T. L. Bissell (August 24): Numerous again and injuring young beans at Experiment.

Mississippi. C. Lyle (August 24): Destroying bean crops at Aberdeen and in counties farther north. (L. G. Goodgame): A report of this insect in Webster County was received from Eupora on August 17.

Arizona. C. D. Lebert (August 13): Reported damaging lima beans near Flagstaff.

Utah. G. F. Knowlton (August 10): County agent reports serious damage to beans in Carbon County.

##### A NOCTUID (*Ogdoconta cinereola* Guen.)

Michigan. R. Hutson (August 21): The striped bean caterpillar has been reported from Kaleva, in Manistee County, and from Arenac, Bay, Midland, and Saginaw Counties, where infestation is general.

##### LESSER CORNSTALK BORER (*Elasmopalpus lignosellus* Zell.)

Mississippi. C. Lyle (August 10): These insects are attacking beans at Booneville.

##### BEAN THRIPS (*Heliothrips fasciatus* Perg.)

Utah. G. F. Knowlton (August 24): Causing moderate damage to beans in most fields in northern Utah.

Arizona. C. D. Lebert (August 13): We have a report from near Flagstaff of severe injury on beans. The leaves were curling badly and turning brown in an 80-acre field and some smaller fields.

### CABBAGE

#### IMPORTED CABBAGE WORM (Ascia rapae L.)

Wisconsin. C. L. Fluke (August 23): The imported cabbage worm, the cabbage looper (Autographa brassicae Riley), and the diamondback moth (Plutella maculipennis Curt.) have been very destructive in southern and eastern Wisconsin. Owing to heavy parasitization, the damage was about over the third week in August.

Minnesota. A. G. Ruggles and assistants (August): Very abundant in east-central Minnesota.

Utah. G. F. Knowlton (August 24): Damaging cabbage wherever control measures are not put into practice in northern Utah.

#### HARLEQUIN BUG (Murgantia histrionica Hahn)

Tennessee. G. M. Bentley (August): Has been very apparent on cabbage, cauliflower, and mustard in many parts of the State.

Mississippi. C. Lyle (August 24): Specimens were collected at Holly Springs on August 23. Complaints of this insect injuring collards, cabbage, and turnips were received.

### PEAS

#### PEA APHID (Illinoia pisi Kltb.)

Maine. J. H. Hawkins (August 5): Parasites, predators, and a fungus disease checked what threatened to become a serious outbreak on canning and garden peas in central Maine. Most important of all in checking the outbreak was the fungus that commonly attacks the pea aphid.

### CUCUMBERS

#### PICKLEWORMS (Diaphania spp.)

Virginia. H. G. Walker and L. D. Anderson (August 28): Melon or pickleworms were very scarce in cantaloup and squash fields at Norfolk early in the season, but they are very abundant in the late plantings of these crops.

South Carolina. F. Sherman (August 23): Prevalent in cucumbers at Clemson, in the western part of the State.

ASPARAGUS

ASPARAGUS BEETLE (Crioceris asparagi L.)

Georgia. J. R. Thomson, Jr. (August 16): Larvae were found feeding on the tips of young asparagus at Fort Valley; adults also present on plants.

California. J. Elmore (July 31): Very abundant at Santa Ana, Orange County, on 25 acres of asparagus, there being 15 to 20 adults and as many larvae per plant. The grower reported injury to shoots earlier in the season.

SQUASH

SQUASH BUG (Anasa tristis Deg.)

New York. N. Y. State Coll. Agr. News Letter (August 16): In Niagara County squash bugs have been particularly pestiferous this year and seem to be extremely hard to kill in small plantings.

Virginia. H. G. Walker and L. D. Anderson (August 28): Have been more abundant in Norfolk than usual and have been rather injurious in several squash fields and have even migrated to nearby watermelon and cantaloup fields where they did considerable damage.

Iowa. H. E. Jaques (August): Occurred throughout the central and southwestern parts of the State, also in Osceola County, in the northern part.

Missouri. L. Haseman (August 20): During the latter half of August swarms of adults have been attacking late squashes at Columbia and several complaints have also been received from over the State. They are mating and ovipositing.

Nebraska. M. H. Swenk (August 20): Damaging squash plants in Custer County on August 7.

Utah. G. F. Knowlton (August 24): Damage is still reported, although more reports of injury were received earlier in the season. Most farmers are no longer raising squash in infested areas because of this pest and most of the State is now infested.

SQUASH BORER (Melittia satyriniformis Hbn.)

Virginia. H. G. Walker and L. D. Anderson (August 28): Very abundant and injurious near Norfolk.

Ohio. T. H. Parks (August 26): Reports of injury have come from Portage and Franklin Counties.

Louisiana. S. S. Sharp (August 25): This insect has been abundant around Baton Rouge during the last month.

ONIONS

ONION MAGGOT (Hylemyia antiqua Meig.)

Utah. G. F. Knowlton (August 2): Reported damaging onions at Vernal, Uintah County.

STRAWBERRY

A CHRYSOMELID (Diachus auratus F.)

Wyoming. Margaret Greenwald (August 12): The beetle fed on the ripening berries of the first crop at Powell, doing considerable damage. Beetles were feeding on leaves and petioles in a jar, and in the field were feeding on the petals and pollen of the blossoms of the second crop. The infested rows of the patch were dusted on August 11. Severe damage was done to berries on old plants, while no beetles were noticed on fruit of young plants in adjoining rows.

TOBACCO

HORNWORMS (Protoparce spp.)

Tennessee. L. B. Scott (August 17): Small larvae of the tomato and tobacco worms are very numerous and in untreated tobacco fields the damage is rapidly becoming severe. Most of the worms are less than 1-1/2 inches long.

TOBACCO FLEA BEETLE (Epitrix parvula F.)

Tennessee. L. B. Scott (August 11): The infestation in central Tennessee dropped sharply during the 10-day period ended August 10. Based on observations in ten random fields the infestation dropped about 50 percent. (August 17): The tobacco flea beetle has suddenly become extremely numerous. During the 7-day period ended August 16 the infestation tripled in most fields. Many fields average 50 beetles per plant, with 100 per plant in some fields.

Kentucky. M. L. Didlake (August 24): Tobacco flea beetles are injurious at Shelbyville.



## C O T T O N   I N S E C T S

### BOLL WEEVIL (Anthonomus grandis Boh.)

South Carolina. F. F. Bondy (July 31): Boll weevils continue to increase in number in Florence County, but migration has not started. Some sections report serious damage and some farmers are dusting.

Georgia. K. P. Conradi (August 7): Many fields in McIntosh County which were practically free of weevils 10 days ago are now generally infested.

P. M. Gilmer (August 7): At Tifton, in southern Georgia, upland cotton is getting beyond the stage of damage. On Sea Island cotton there has been a tremendous increase in population within the last 10 days, due to migration, and considerable damage is being caused to bolls.

W. L. Lowry (August 7): In Lowndes and Echols Counties rapid emergence and extensive migration have increased the infestation during the past week. At Valdosta on one plantation of Sea Island cotton the infestation increased from an average of 13 percent on July 30 to 66 percent on August 6. Damage in some fields is severe with weevils attacking full-grown bolls of Sea Island.

Florida. K. H. Smith (August 21): In Alachua County the weevil in Sea Island cotton squares increased from an average of 35.2 percent in 13 untreated fields examined during the week ended July 31 to 67.3 percent in 15 fields examined during the week ended August 21.

Mississippi. C. A. Henderson and J. E. Ragland (August 14-21): In Oktibbeha County the infestation is light, about the same as last year, the average square infestation in eight fields being 21 percent as compared to 20 percent for the same week in 1936.

E. W. Dunnam. (August 21): Infestation in Washington County is concentrated in late cotton and some damage is being done. Some farmers are poisoning late spots. The infestation ranges from 40 to 60 percent. Ninety-five percent of the crop is mature.

Louisiana. R. C. Gaines (August 21): At Tallulah, in the Delta section, damage is occurring in only a few isolated fields of young cotton. Some commercial poisoning was done during the past week.

Texas. K. P. Ewing (July 31): In Calhoun County many farmers claim that the weevil infestation is worse than ever before. (August 14): Weevils are still a serious menace in the young cotton and most farmers are dusting. On the older cotton a good crop was set before the weevils became abundant.

R. W. Moreland (August 21): At College Station (eastern Texas) boll weevils are still injuring late cotton.

Oklahoma. C. F. Stiles (August 24): No doubt the infestation is lighter over the entire cotton-producing section of the State than it has been for a number of years. McCurtain and Choctaw are the only counties reporting injury.

A WEEVIL (Compsus aricephalus Say)

Louisiana. H. L. Dozier (August 9): This beetle was observed ragging foliage of cotton at Sligo, but no serious damage was being done. It was also observed at Bossier City on cotton. This is the first time that the insect has been noticed on cotton in recent years.

COTTON LEAF WORM (Alabama argillacea Hbn.)

South Carolina. F. F. Bondy (August 25): The first leaf worms at Florence--several half-grown larvae--were seen today.

Georgia. K. P. Conradi (July 31): In McIntosh County (southeastern Georgia) one three-fourths-grown larva was found in the experimental plots on July 29.

W. L. Lowry (August 7): Only one specimen has been found in Echols County (southern Georgia). There have been light infestations sporadically around Tifton.

Florida. J. R. Watson (August 9): Leaf worms are more abundant around Gainesville than they have been since 1912. In Gilchrist County one farmer reports that his Sea Island cotton has been entirely defoliated.

K. H. Smith (August 28): The leaf worm is found in all fields of Alachua County and in about 25 percent of the fields the cotton has been completely defoliated.

Tennessee. G. M. Bentley (August 25): The cotton leaf worm was reported from Tipton County today.

Mississippi. C. Lyle (August 24): The first leaf worm was found at State College on August 5. Very light infestations were reported from Bolivar County on August 10.

Louisiana. C. O. Eddy (August 25): A generation of leaf worms appeared around Opelousas in Saint Landry Parish about August 7, and by August 12 there were other infestations in the parish. They were found defoliating cotton south of Lafayette, Lafayette Parish, recently.

R. C. Gaines. The first specimen was found near Tallulah on August 7. The larva was about three-fourths grown.

Arkansas. D. Isely (August 24): The leaf worm appeared very late, the first record being made on August 17 at Lafayette. It now appears that the larvae are scattered over the State, although the infestations are light.

Oklahoma. C. F. Stiles (August 24): The insect has been reported throughout the southeastern part of the State and threatens to damage late cotton. Control measures have been started in some instances.

Texas. F. L. Thomas (Progress Report Tex. Agr. Exp. Sta.) (August 14): Leaf worms have been found in the vicinity of Lubbock, Lubbock County. (August 21): Reported from Dawson County, but not in sufficient numbers to cause injury. (August 28): Found in Tom Green County and control measures are being used in Smith County.

K. P. Ewing (August 7): At Port Lavaca the cotton leaf worm is making no progress in the old cotton but is appearing in the young cotton. As this cotton is being dusted for boll weevil control, the leaf worms are also being controlled.

R. W. Moreland (August 21): In Brazos and Burleson Counties some dusting is being done to control leaf worms in the young cotton.

A. J. Chapman (August 21): At Presidio, in the Big Bend area, leaf worms were sufficiently abundant to justify spot poisoning on one farm.

Arizona. W. A. Stevenson (August 21): Several leaf worms, approximately 2 days old, were found at Continental on August 20. On the same day one worm was found at Calabasas.

#### PINK BOLLWORM (Pectinophora gossypiella Saund.)

Texas. A. J. Chapman (August 28): The records in the Big Bend indicate that the percentage of boll infestation and the number of worms per boll are considerably higher than at this time last year. The crop is also further advanced and is rapidly maturing.

#### COTTON LEAF PERFORATOR (Bucculatrix thurberiella Busck)

California. O. A. Pratt (August 18): There has been during the past 3 weeks a very severe outbreak and the growers are reporting heavy losses in the Imperial Valley. The insect had done little damage until the latter part of July when it began to increase rapidly.

Arizona. T. P. Cassidy (August 21): Several reports at Tucson during the last 10 days, but we have not found any of the infestations heavy enough to cause commercial damage.

#### COTTON LEAF MINER (Nepticula gossypii Forbes & Leonard)

Puerto Rico. L. C. Fife (August 7): Found this species on cotton at Boqueron on the southern coast of Puerto Rico in 1935-36 and in 1936-37. It occurred only in limited numbers and the damage caused was negligible. Have also taken it on hollyhock (Althaea rosea) at Mayaguez.

#### BOLLWORM (Heliothis obsoleta F.)

South Carolina. F. F. Bondy (July 31): A few bollworms have been found feeding



on squares at Florence, but no appreciable damage.

Georgia. K. P. Conradi (August 7): A few bollworms have been found in plots in Chatham and McIntosh Counties in Sea Island cotton. (August 27): Bollworms are causing serious damage in some fields of Sea Island cotton in McIntosh County.

W. L. Lowry (August 14): Increased injury was noted in most fields examined recently in Lowndes and Echols Counties.

P. M. Gilmer (August 7): Bollworms are present in small numbers at Tifton, but the damage is only local and not severe.

Florida. J. R. Watson (August 23): Fields, particularly those planted near cornfields, have been badly infested. In some fields 10 percent of the bolls were destroyed. In every instance the corn had matured and become unattractive to the insect.

K. H. Smith (August 14): Numerous bollworms were found in several fields during the week and in some fields near Gainesville they were causing considerable damage.

Mississippi. C. A. Henderson and J. E. Ragland (August 28): A few bollworms are still found on cotton, but they are doing little damage.

E. W. Dunnam (August 21): Only slight damage to cotton has been reported throughout the season in Washington County.

Louisiana. H. L. Dozier (August 7): A heavy general infestation was found on 1,600 acres of cotton at Curtis, in Bossier Parish. An estimated loss of 40 percent has already been done. Squares and bolls of all sizes have been ruined. It is the worst outbreak I have ever seen.

Texas. R. W. Moreland (August 7): In Brazos and Burleson Counties, in eastern Texas, injury has been light in most all of the old cotton, but is heavy in the young cotton.

K. P. Ewing (August 21): In Calhoun County this insect continues to damage young cotton. It is perhaps the worst menace to the several thousand acres of June-planted cotton in this and other southern counties.

A. J. Chapman (August 21): The cotton bollworm infestation has been much more severe this year than in any previous year.

#### COTTON FLEA HOPPER (Psallus seriatus Reut.)

South Carolina. F. F. Bondy (July 31): There have been very few flea hoppers in Florence County and practically no damage.

Georgia. K. P. Conradi (August 7): In McIntosh County no flea hoppers have been found.



P. M. Gilmer (August 7): No flea hopper injury has been experienced in southern Georgia at Tifton, nor in Lowndes and Echols Counties.

Florida. K. H. Smith (August 14): Two flea hoppers, taken in a field near Worthington August 13, were the first seen during the season.

Mississippi. E. W. Dunnam (August 14): In Washington County damage has been noted on one plantation 6 miles from Leland. The insects had left the field when examined.

Louisiana. R. C. Gaines (August 28): Very little damage has been caused in Madison Parish.

Texas. R. W. Moreland (August 21): In Brazos and Burleson Counties practically no flea hoppers are to be found in the old cotton and the infestation seems to be spotted in young cotton.

K. P. Ewing (August 7): With the continued dry weather there has been practically no hatch of eggs and the infestation has gradually diminished until in most fields of young cotton there is only a small amount of damage being done. (August 21): Some damage continues in the June-planted cotton.

F. L. Thomas (Progress Report Agr. Exp. Sta.) (August 21): Flea hoppers continue to cause damage in young growing cotton, particularly in Calhoun, Milam, and Tom Green Counties. Unusual damage has occurred in Tom Green County.

#### LEATHOPPERS (Empoasca spp.)

Louisiana. H. L. Dozier (August 19): E. solana DeL. and E. fabae Harr. are abundant on cotton at Sligo. (Det. by P. W. Onan.)

#### PLANT BUGS (Lygus spp.)

Mississippi. E. W. Dunnam (August 14): The tarnished plant bug (L. pratensis L.) is very numerous in most fields of late cotton at Stoneville in the Delta section, but did not appear in great enough numbers to cause injury to early cotton. (August 28): Some dusting is being done.

New Mexico. J. R. Eyer (August 18): There is an outbreak of Lygus sp. in the cotton near Las Cruces.

#### RAPID PLANT BUG (Adelphocoris rapidus Say)

Florida. K. H. Smith (July 31): Appearing in all cotton fields in Alachua County and in many causing severe damage.

FOREST AND SHADE - TREE INSECTS

BAGWORM (Thyridopteryx ephemeraeformis Haw.)

Delaware. L. A. Stearns (August 2): More abundant than usual on evergreens throughout the entire State.

H. F. Dietz (August 24): Has been unusually abundant and serious on arborvitae throughout the northern half of Delaware.

Maryland. E. N. Cory (August 7): Generally very numerous over the State on evergreens.

Virginia. H. G. Walker and L. D. Anderson (August 28): Many reports of bagworms injuring shade trees were received from Norfolk.

South Carolina. F. Sherman and W. C. Nettles (August 23): Reports from various localities.

Georgia. O. I. Snapp (August 2): Bagworms are unusually abundant at Fort Valley. As many as one peck were hand picked from one small arborvitae.

Ohio. E. W. Mendenhall (August 10): Quite bad on arborvitae, elms, and other trees in Bexley. Some arborvitae were nearly defoliated. On apple trees at Wade, Washington County. They are also very bad on nursery stock in Belpre, Washington County.

N. F. Howard (August 17): Several requests for control on arborvitae have been received from Columbus.

Indiana. J. J. Davis (August 23): Reported damaging evergreens at Terre Haute and Greensburg.

Kentucky. M. L. Didlake (August 24): Abundant at Lexington, Olin, and Maysville.

Tennessee. G. M. Bentley (August): Generally there have been remarkably few bagworms this year.

Mississippi. C. Lyle (August 24): Specimens taken from shrubbery at Tupelo on July 23 and from pecan at Cuevas on August 16. Reports of injury to arborvitae were received from D. W. Grimes of Durant and M. L. Grimes of Meridian.

Texas. C. E. Nickels (August 14): Have defoliated several species of trees, especially evergreens and hackberry, in the vicinity of Brownwood.

FALL WEBWORM (Hyphantria cunea Drury)

Vermont. J. Laliberty (August 17): Found in my front yard at Norton.

Connecticut. M. P. Zappe (August 23): Nests are very scarce. Hardly any have been observed. Scarce in 1936 and even less in 1937.

- New York. New York Times (August 30): The back yards of New York City are in the grip of an invasion of webworms, the fall webworm, according to the arboriculturist of the Parks Department, who also said that it is the worst epidemic of this insect in 7 or 8 years. Trees in the parks and on the streets are free from the caterpillars.
- Delaware. L. A. Stearns (August 24): During the first 2 weeks in August the fall webworm was observed throughout the State.
- Georgia. O. I. Snapp (August 20): Abundant at Fort Valley, and webs containing newly hatched to half-grown larvae are now common on pecan trees.
- Ohio. E. W. Mendenhall (August 27): Very bad on elms, apples, cherry, etc.
- Tennessee. G. M. Bentley (August): Becoming apparent in different parts of the State, primarily in middle Tennessee.
- Louisiana. B. A. Osterberger and L. O. Ellisor (August 25): On pecan, willow, and persimmon trees, in some cases very serious defoliation being noticed. Second-generation larvae are unusually abundant on pecans at Baton Rouge.

SATIN MOTH (Stilpnotia salicis L.)

- New Hampshire. A. F. Burgess (July): Poplar trees were found heavily infested in the village of West Lebanon. On July 16 many adults were noted on electric light poles in West Lebanon.
- Vermont. A. F. Burgess (July): Poplar trees were found heavily infested in the village of Wilder.
- Washington. M. J. Forsell (August 27): There is no visible damage at Seattle, King County, where formerly it completely stripped the trees. Parasites were distributed at one time and they seem to have effected complete control. This is one of the best two examples of biological control in this area.

WHITE-MARKED TUSSOCK MOTH (Hemerocampa leucostigma S. & A.)

- New York. R. E. Horsey (July): Egg mass found July 28. Formerly a severe pest in Rochester, but of late years it is uncommon.

TWIG GIRDLER (Oncideres cingulatus Say)

- Missouri. L. Haseman (August 21): The oak twig pruner, a common pest, is quite abundant and the larvae are over half grown in central Missouri.

ASH

BANDED ASH BORER (Neoclytus caprea Say)

- Nebraska. M. H. Swenk (August 20): The banded ash borer was reported infesting ash trees in Nuckolls County on July 29.

CARPENTER WORM (Prionoxystus robiniae Peck)

Nebraska. M. H. Swenk (August 20): The carpenter worm was reported to be working in ash trees in Nuckolls County on July 29.

A MITE (Eriophyes fraxiniflora Felt)

Utah. G. F. Knowlton (August 19): The work of this mite is evident upon blue ash in a nursery at Logan.

BIRCH

BIRCH LEAF MINER (Fenusa pumila Klug.)

New England and New York. E. P. Felt (August 14): Was somewhat generally abundant in southern New England and New York State, causing appreciable defoliation in some localities.

CATALPA

CATALPA SPHINX (Ceratomia catalpae Bdv.)

Delaware. H. F. Dietz (August 24): Many large trees of Catalpa bignonioides in New Castle County have been completely defoliated.

Maryland. E. N. Cory (August 18): There is a general infestation in Frederick.

Gertrude Myers (August 7): Catalp trees along Avery Road, 2 miles east of Rockville, are being defoliated.

Ohio. E. W. Mendenhall (August 11): Destroying the foliage of catalpa trees in Beverly and Belpre, Washington County.

Kentucky. M. L. Didlake (August 24): Completely defoliated many trees throughout the State.

CATALPA MIDGE (Itonida catalpae Comst.)

Connecticut. E. P. Felt (August 14): Has been injurious in the Stamford area.

ELM

ELM LEAF BEETLE (Galerucella xanthomelaena Schr.)

New York. L. H. Worthley (July): Slippery elm foliage has suffered considerable damage along the Hudson River from Buchanan in Westchester County to the Putnam County line. On Long Island English elms have been severely defoliated, especially in the vicinity of Oyster Bay.

New Jersey. L. H. Worthley (July): Elm foliage is in better condition than last year, although considerable elm leaf beetle feeding is apparent



throughout much of the infested zone. Injury showed up most prominently following several weeks of hot, dry weather late in the month.

Maryland. E. N. Cory (July 27): Elm leaf beetle infesting elm at Easton.

MOURNING-CLOAK BUTTERFLY (Hamadryas antiopa L.)

Utah. G. F. Knowlton (August 24): Larvae of the mourning-cloak butterfly have damaged elms at Logan, Brigham, and Salt Lake City.

C. J. Sorenson (August 22): At Logan, Cache County, the spiny elm caterpillar damaged a few Siberian elms.

ELM LACEBUG (Corythucha pallida ulmi O. & D.)

Vermont. H. L. Bailey (August 19): Very abundant on elms in Rutland County, southwestern Vermont. Foliage of many trees is completely yellowed.

Massachusetts and Connecticut. E. P. Felt (August 14): Has been increasing in numbers for the past 10 years along automobile route #7, especially from near New Milford, Conn., to Great Barrington, Mass. The infestation is restricted practically to trees growing in thickets or grassy areas.

Connecticut. W. E. Britton (August 23): This lacebug has been rather prevalent on elm trees in the northwestern portion of Litchfield County, according to Wallace. Specimens were recently received from Kent.

Florida. J. R. Watson (August 23): Has quite generally browned the elm tree.

EUROPEAN ELM SCALE (Gossyparia spuria Mod.)

New York. R. E. Horsey (July 27): I found adults, moving young, and shriveled scales that had hatched earlier in the season on elm at Rochester today.

Maryland. E. N. Cory (August): Noted on elm in Dickerson.

Indiana. J. J. Davis (August 23): Continued reports from the northern half of the State emphasize the increasing importance of this pest.

FIR

DOUGLAS FIR TUSSOCK MOTH (Hemerocampa pseudotsugata McD.)

Idaho. J. C. Eyenden (August 8): An outbreak at Hailey, in southern Idaho, was reported in 1936, at which time there were some small spots of infestations. The 1937 infestation indicates a marked increase in the size of the infested area as well as in the severity of the defoliation. An outbreak of Nerytia canosaria Walk. is associated with the epidemic of the Douglas fir tussock moth. This insect is quite numerous and will aid in the defoliation of the trees.

A LOOPER (Ellopia sp.)

Idaho. J. C. Evenden (August 3): Ellopia, near pellucidaria G. & R., was defoliating forest trees on large areas of forest land in northern Idaho, with white fir as the preferred host. Abnormal numbers of the moths were recorded last fall, although no serious defoliation occurred.

HEMLOCK

A SCALE INSECT (Aspidiotus tsugae Marlatt)

Connecticut. W. E. Britton (August 23): Specimens of what appear to be this scale were received from Greenwich. Infested leaves were yellow and dropping, indicating considerable injury.

LARCH

LARCH CASEBEARER (Coleophora laricella Hbn.)

Switzerland. H. D. Smith (July 29): Going over Simplone Pass to Italy on northside of the Alps the larch forests present a brown appearance. Very heavy infestation can be seen for miles. Here and there a tree has escaped heavy damage.

LOCUST

LOCUST LEAF MINER (Chalepus dorsalis Thunb.)

Pennsylvania and West Virginia. L. M. Peairs (August 13): Injury is not noted at all at Morgantown, W. V., but just a few miles north in Pennsylvania, north to Greensburg, the miner is getting worse. The woods have a very decidedly brownish cast due to extensively injured locust trees. It is the worst infestation I have seen for several years.

Maryland. E. N. Cory (August 5): There is a general browning of the locust trees in most parts of the State east of the fall line.

LOCUST BORER (Cyllene robiniae Forst.)

Nebraska. M. H. Swenk (August 20): From Thurston County on August 14 came a complaint of seriously infested locust trees.

MAPLE

AN APHID (Neoprociphilus aceris Monell)

Virginia. A. M. Woodside (August 23): An infestation of a large bark-feeding aphid, probably N. aceris, was observed at Staunton on the lower branches of a few sugar maples on August 12.

WOOLLY ALDER APHID (Prociphilus tessellatus Fitch)

Indiana. J. J. Davis (August 23): Continues to be reported as exceptionally abundant on hard maple in the northern half of the State.

COTTONY MAPLE SCALE (Pulvinaria vitis L.)

Indiana. J. J. Davis (August 23): Many reports have been received from the two northern tiers of counties, especially the western counties. The scale is undoubtedly more abundant than for many years.

OAK

A LEAF MINER (Lithocolletis hamadryadella Clem.)

New York. R. E. Horsey (July 30): A request for information about this insect was received at Rochester. It had badly disfigured leaves on black or red oak in an ornamental planting.

PINE

EUROPEAN PINE SHOOT MOTH (Rhyacionia buoliana Schiff.)

Massachusetts. E. P. Felt (August 14): The European pine shoot moth has become somewhat troublesome in Milton.

Connecticut. E. P. Felt (August 14): Occurs in greater numbers than for the past few years in the Stamford area.

New Jersey. F. A. Soraci (August 7): Heavy infestation, and scattered throughout Passaic County. Larvae have entered the buds and in some cases are 1/4 inch long.

SPRUCE BUDWORM (Cacoecia fumiferana Clem.)

Michigan. J. K. Kroeber (August 6): Extensive defoliation of jack pine in Marquette County.

WHITE-PINE WEEVIL (Pissodes strobi Peck)

New York. R. E. Horsey (August 8): On August 8, dead tips of Serbian spruce (Picea onorika) at Rochester, were pointed out to me as caused by this insect. The weevil has caused more or less damage to white pine in ornamental plantings for several years past at Rochester.

A SAWFLY (Itycorsia zappei Rohw.)

New Jersey. F. A. Soraci (August 10): An outbreak of the false pine webworm was found in a nursery. The infestation was observed on June 24 at which time the larvae were completing feeding and were entering the soil. The infestation extended over a planting of about 5 acres of Pinus resinosa and webs were formed on all limbs of the trees. At the present time only those needles of this year's growth remain. The larvae are in the soil about the bases of the trees.

PINE NEEDLE SCALE (Chionaspis pinifoliae Fitch)

Ohio. E. W. Mendenhall (August 27): Quite bad on pine tree stock in a nursery at Lancaster.

POPLAR

COTTONWOOD BORER (Plectrodera scalator F.)

Nebraska. M. H. Swenk (August 20): A specimen of the cottonwood borer was mailed in from Franklin County on July 23. A report sent in from Merrick County on July 24 indicated that the borer was killing cottonwood trees in that locality.

SPRUCE

EUROPEAN SPRUCE SAWFLY (Diprion polytomum Htg.)

Maine. H. J. MacAloney (July): The survey now being conducted in northern Maine has revealed areas of heavy defoliation covering in the aggregate thousands of acres. The infestations found thus far are located along the Allagash and St. Johns Rivers. On the Allagash trees have died from last year's defoliation. The infestation in certain areas is fully as heavy as at Parke Reserve, Kamouraska County, Quebec, Canada. Sample collections of cocoons in the duff have shown that 20 living cocoons per square foot occur in certain areas.

WILLOW

POPLAR AND WILLOW BORER (Cryptorhynchus lapathi L.)

Indiana. J. J. Davis (August 23): Mottled poplar and willow borer was damaging willow at Muncie according to a report received August 5.

Special note--A native American plant, Salvia reflexa, belonging to the mint family, has become a noxious weed in Australia. It would be of considerable interest if entomologists within the range of this plant in the Great Plains and Rocky Mountain States would report on all insects that have been recorded from this plant.



INSECTS AFFECTING GREENHOUSE  
AND ORNAMENTAL PLANTS AND LAWNS

HAIRY CHINCH BUG (Blissus hirtus Montd.)

New York. E. P. Felt (August 14): The hairy chinch bug has been locally abundant and injurious to lawns in southwestern New England and southeastern New York.

SOD WEBWORMS (Crambus spp.)

California. R. E. Campbell (August 26): Innumerable inquiries are being received regarding the control of sod webworms in Los Angeles and surrounding communities where bluegrass and bent lawns are being seriously damaged.

OYSTERSHELL SCALE (Lepidosaphes ulmi L.)

Massachusetts. E. P. Felt (August 14): Oystershell scale was extremely abundant on the smaller beech trees growing under wild conditions at Great Barrington. The insects were so numerous as to kill a considerable proportion of the small twigs.

Indiana. J. J. Davis (August 23): Reported destructively abundant on peony at Tipton, August 4.

AZALEA

AZALEA LACEBUG (Stenhanitis pyrioides Scott)

Delaware. H. F. Dietz (August 24): A heavy infestation of this pest was found on Azalea indica in an extensive planting at Wilmington.

BARBERRY

A PYRALID (Omphalocera dentosa Grote)

Pennsylvania. C. C. Hill (August 30): Severe damage to Japanese barberry was observed at Greason.

Maryland. E. N. Cory (August 18): Noted attacking barberry bushes at Libertytown.

BOXWOOD

BOXWOOD LEAF MINER (Monarthronotus buxi Laboulb.)

Maryland. E. N. Cory (July 30): Boxwood leaf miner noted on American boxwood at Hagerstown.

DAHLIA

SUNFLOWER WEEVIL (Rhodobaenus tredecimpunctatus Ill.)

Louisiana. H. L. Dozier (August): Rather heavy loss incurred during July and August at Opelousas, large dahlia plants being killed quickly.

CHRYSANTHEMUM

GREENHOUSE LEAF TIER (Phlyctaenia rubigalis Guen.)

Delaware. H. F. Dietz (August 24): An incipient outbreak of this insect was found in extensive greenhouse plantings of chrysanthemums.

ONION THRIPS (Thrips tabaci Lind.)

Delaware. H. F. Dietz (August 24): Serious injury to chrysanthemums in certain greenhouses in the vicinity of Wilmington were investigated during the past month.

A MEMBRACID (Vanduzee segmentata Fowl.)

Louisiana. H. L. Dozier (August 20): A membracid breeding in large numbers on commercial plantings of chrysanthemum at Opelousas. (Det. by F. W. Oman.)

MAGNOLIA

MAGNOLIA SCALE (Neolecanium cornuparvum Thro)

New York. R. E. Horsey (July 30): A few found July 30 on Magnolia acuminata at Rochester. It was numerous last year. The scale was scraped off last summer and the trees were given a miscible oil spray the past spring, which was very effective in destroying the scale.

NINEBARK

A CHRYSOMELID (Calligrapha rhoda Knab)

Ohio. J. S. Houser (August 5): Causing general defoliation of ninebark (Physocarpus sp.) at Toledo.

PRIVET

A THRIPS (Psilothrips sp.)

Maryland. E. N. Cory (August 13): Psilothrips sp. was found attacking privet hedge at Baltimore. (Det. by J. R. Watson.)

RHODODENDRON

RHODODENDRON LACEBUG (Stephanitis rhododendri Horv.)

Delaware. H. F. Dietz (August 24): Has caused very severe injury in several ornamental plantings in the vicinity of Wilmington. In all cases these plantings were in unfavorable situations.

ROSE

ROSE MIDGE (Dasyneura rhodophaga Coq.)

Indiana. J. J. Davis (August 23): Has been reported from a number of additional greenhouses in central and north-central Indiana.

MOSSY ROSE GALL (Rhodites rosae L.)

New York. R. E. Horsey (August 10): Rose bedeglar was noted on Rosa canina, a large mosslike mass of green fibre, in Rochester. The galls contain live larvo.

SPIREA

APPLE TWIG BORER (Schistoceros hamatus F.)

Mississippi. C. Lyle (August 24): Specimens of the grape cane borer were found boring in the stems of a Spirea plant at Como on August 16.

I N S E C T S A T T A C K I N G M A N A N D

D O M E S T I C A N I M A L S

MAN

FLEAS (Ctenocephalides spp.)

United States. F. C. Bishopp (August): These pests have been unusually troublesome this summer.

Connecticut. B. H. Walden (August 21): More reports, from Middlesex County, of infestations in buildings so far during August that we have had before in any one month.

South Carolina. W. C. Nettles (August 23): Several reports of invasion of residences. These all happen to be from the western part of the State.

Indiana. J. J. Davis (August 23): Has been more numerous than for several years in homes and farm buildings during the past month. All reports received have come from the northern half of the State.

Tennessee. G. M. Bentley (August): The dog flea continues to be a pest in homes where no attention has been given the dog.

DEER FLIES (Chrysops spp.)

Utah. G. F. Knowlton (August 7): Deer flies are annoying to man at Lakota, Garden City, Benson, and Murray, in northern Utah.

AMERICAN DOG TICK (Dermacentor variabilis Say)

Massachusetts. F. C. Bishopp (August 30): Two cases of Rocky Mountain spotted

fever occurred at East Brewster on Cape Cod in July. This is the first report of this dread disease of man in New England. Each individual had been bitten by wood ticks and this species of tick is abundant throughout Cape Cod and on adjacent islands.

Connecticut. P. Garman (August 20): A case was observed at New Haven where these ticks were breeding freely and the dog heavily infested.

District of Columbia. F. C. Bishopp (August): Although the numbers of the American dog tick decreased in Washington and vicinity to very small numbers during August, examinations of animals indicate they are more abundant than they were at the same time last year.

Nebraska. M. H. Swenk (August 20): A specimen of common wood tick found in a house was sent in from Merrick County on August 6.

#### BLACK WIDOW SPIDER (Latrodectus mactans F.)

Kentucky. M. L. Didlake (August 24): Black widow spiders are abundant near Danville. One man was bitten.

Mississippi. C. Lyle (August 24): A specimen of the black widow spider was sent to this office by a correspondent in Calhoun County.

Missouri. L. Haseman (August 21): This month and, in fact, throughout the summer, we have not had the usual number of complaints about this much feared spider.

Nebraska. M. H. Swenk (August 20): A complaint of the presence of the black widow spiders came from Lincoln County on July 23.

#### CATTLE

##### SCREWORM (Cochliomyia americana C. & P.)

South Carolina. W. E. Dove (August 31): An infestation at Monck's Corner treated during the latter part of July was reported with specimens of C. americana. At Walterboro cases have been occurring during the past 3 weeks, and are said to be numerous in the vicinity of Beaufort.

Georgia. W. E. Dove (August 31): For the 5-week period ended August 20 there were 411 cases reported from different southern and coastal counties of Georgia. During the week ended August 27 localized outbreaks were reported in Ware, Atkinson, and Brooks Counties. Estimates of cases increased in Brooks County from 500 to 1,500.

Florida. W. E. Dove (August 31): For the 5-week period ended August 20 there were 5,663 cases occurring among 750,776 animals. A localized outbreak of almost 6 percent of the animals in Dixie County was brought under control by cooperating stockmen. A new outbreak now occurs as far west as Gadsden County. During the month the infestation decreased to small numbers in the southern counties of the peninsula but showed a decided increase in the northern counties where Gulf coast ticks are becoming a serious problem.



Kansas. W. E. Dove (August 31): Scattered cases of screwworms are present at different places in the grazing sections of Kansas where biting flies are now causing a serious outbreak.

Oklahoma. W. E. Dove (August 31): Reports from stockmen in Stephens, Love, McLain, and Bryan Counties show very light infestations for the month ended August 15.

Texas. W. E. Dove (August 31): Stockmen in 56 counties, in reply to questionnaires, reported 6,859 cases, representing 498,793 animals. In the principal sheep and goat-breeding area 9 counties reported 860 infestations among 35,762 animals. In Briscoe County, of the Panhandle, 204 cases were reported among 3,000 animals. In eastern Texas stockmen are treating injuries when animals are dipped for ticks, and screwworm cases in this area are of rare occurrence. There is now a strong tendency for cases to build up in the coastal areas between Willacy and Jackson Counties in bites of the Gulf coast tick.

Arizona. W. E. Dove (August 31): County agent K. A. Boevers reports 50 infestations among 18,000 animals in the southern half of Greenlee County.

#### HORSES

##### STABLEFLY (*Stomoxys calcitrans* L.)

General. F. C. Bishopp (September 2): A rather severe outbreak of stableflies beginning about the middle of July has continued to cause considerable losses to farmers and stockraisers in the North Central States. In the grazing area of southern Kansas cattle were reported to have suffered an average loss in weight of 50 pounds per head on account of the pest. Recent reports from Iowa indicate that the outbreak is beginning to subside in that State.

Iowa. S. W. Simmons (June 28 to July 13): In a survey of 37 farms in the vicinity of Ames the stablefly was the worst of all insect pests of horses. Of the 101 animals examined 19 were mules. It was the opinion of their owners, in all instances except one, that stableflies were worse on mules than on horses. One farmer owning both mules and horses said that he had not been able to use his mules on several occasions due to the abundance of stableflies. Examination revealed the preference of stableflies for mules. It is estimated that about 80 percent of the farmers regularly use nets on their work animals as protection against the stablefly. In quite a few instances farmers sprayed their animals three or four times daily. Some farmers carried sprays with them.

Missouri. L. Haseman (August 21): Stableflies have been less abundant and vicious than during July.

Kansas. H. R. Bryson (August 24): Biting flies are causing much annoyance to livestock in many sections of the State.

# MOSQUITOES (Culicinae)

United States. F. C. Bishopp (August): Brain fever, or encephalomyelitis, of horses has appeared in serious epizootic proportions in the North Central States, especially in Minnesota, South Dakota, Nebraska, and Iowa. Heavy death losses are reported. Rendering plants are unable to handle the dead animals and the farmers are seriously handicapped. The disease is also present in Colorado, Wyoming, Utah, Texas, Virginia, and Maryland, and probably other States are involved. It is important that all information possible on the relative abundance and distribution of various mosquitoes and biting flies be gathered throughout the affected areas.

Georgia. J. B. Hull (July): Increased rainfall during July has apparently increased the abundance and annoyance of the salt marsh mosquitoes Aedes sollicitans Walk. and A. taeniorhynchus Wied. with the former the most troublesome.

Washington. H. H. Stage (July): Aedes aloponotum Dyar and A. cinereus Meig. were investigated about Lake Tapps, Pierce County.

Utah. G. F. Knowlton (August 12): Mosquitoes are very abundant in the Delta area, in which an outbreak of equine encephalomyelitis is now occurring.

Oregon. H. H. Stage (July 16): A severe epidemic of the mosquito Culex tarsalis Coq. was reported from Lebanon. This species is seldom numerous enough to constitute a pest. A. vexans Meig. and A. aldrichi Dyar and Knab are not abundant in the Portland area. In fact, samples taken at various points in Multnomah County give but 10 to 30 percent of the numbers taken in 1936. A. vexans, which has been severe heretofore in and about Hood River, has been of no consequence this season. The so-called snow or mountain species, A. communis Deg., A. hexodontus Dyar, and A. aboriginis Dyar, have been reported as extremely annoying in several isolated districts throughout the Cascade Mountains.

## HOUSEHOLD AND STORED-PRODUCTS INSECTS

### CRICKETS (Gryllus spp.)

Virginia. H. G. Walker and L. D. Anderson (August 28): Quite a number of home owners in Norfolk have called, stating that crickets were very abundant in their homes and were eating their clothing.

Wisconsin. C. L. Fluke (August 23): A small brown cricket reported from cities in western counties is particularly troublesome in front of stores, gathering on the doors and windows and entering the stores.

Minnesota. K. A. Kirkpatrick (August 24): Field crickets are unusually abundant.

Nebraska. M. H. Swenk (August 20): Many complaints of annoyance in and around houses by the field cricket have been received during the month of August, coming chiefly from Lancaster and Gage Counties, west to Harlan County.

A report from Garden County on August 11 stated that they were attacking tomatoes in that locality.

Kansas. H. R. Bryson (August 24): Field crickets continue to annoy occupants of houses in both the city and the country. In some instances they have caused considerable damage to household furnishings. Reports have come in from Jewell, Riley, Lincoln, Saline, and Cloud Counties, and from the towns of Mullinville, Dodge City, Lindsborg, Nickerson, and Peabody.

#### ANTS (Formicidae)

Nebraska. M. H. Swenk (August 20): Ants were reported to be infesting flower beds in Douglas County on July 26, and on July 27 a Grant County correspondent stated that they were proving troublesome in lawns and in trees in that locality. Monomorium pharaonis L. was complained of as bothering in a house and cave in Madison County on August 17.

Mississippi. C. Lyle (August 24): Complaints of Argentine ants (Iridomyrmex humilis Mayr) have been received from Jackson, Durant, West, and Kosciusko.

#### DARK MEALWORM (Tenebrio obscurus F.)

Kansas. R. T. Cotton (July): An unusual case of injury was recently investigated. The worms, breeding in large numbers in waste meal that had fallen to the ground under a warehouse, were migrating up the walls of the warehouse through cracks in the floor and collecting in the ears of burlap bags of feed. They were not damaging the feed, but the presence of 50 or 60 worms in each ear of the bags rendered them unattractive to prospective purchasers and spoiled the sale of a considerable quantity of feed.

#### PEA WEEVIL (Bruchus pisorum L.)

Indiana. J. J. Davis (August 23): A heavy infestation reported from Brazil, on August 6. The specimens submitted were in the mature larval and pupal stages.

#### BEAN WEEVIL (Acanthoscelides obtectus Say)

Utah. G. F. Knowlton (August 3): Bean weevils have ruined beans in one home at Logan, and become serious household nuisances as soon as the beans were distributed.

#### CIGARETTE BEETLE (Lasioderma serricorne F.)

Virginia. E. M. Livingstone (August 18): Warehouses in Richmond in which no control measures are employed appear to have the heaviest infestation of the cigarette beetle since 1933. Old tobaccos brought in from eastern North Carolina are heavily infested.

Nebraska. M. H. Swenk (August 20): A Cuming County correspondent reported that the cigarette beetle was infesting a mohair davenport in that county on August 16, and a Lancaster County correspondent made a similar report on August 20.



1. The first part of the paper is devoted to a discussion of the

theoretical aspects of the problem. In the first section, we consider the case of a single particle. In the second section, we consider the case of a system of particles. In the third section, we consider the case of a system of particles in a magnetic field. In the fourth section, we consider the case of a system of particles in a magnetic field and a electric field. In the fifth section, we consider the case of a system of particles in a magnetic field and a electric field and a magnetic field.

### 2. The second part of the paper is devoted to a discussion of the

experimental aspects of the problem. In the first section, we consider the case of a single particle. In the second section, we consider the case of a system of particles. In the third section, we consider the case of a system of particles in a magnetic field. In the fourth section, we consider the case of a system of particles in a magnetic field and a electric field. In the fifth section, we consider the case of a system of particles in a magnetic field and a electric field and a magnetic field.

3. The third part of the paper is devoted to a discussion of the

### 4. The fourth part of the paper is devoted to a discussion of the

conclusions of the paper. In the first section, we consider the case of a single particle. In the second section, we consider the case of a system of particles. In the third section, we consider the case of a system of particles in a magnetic field. In the fourth section, we consider the case of a system of particles in a magnetic field and a electric field. In the fifth section, we consider the case of a system of particles in a magnetic field and a electric field and a magnetic field.

### 5. The fifth part of the paper is devoted to a discussion of the

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### 6. The sixth part of the paper is devoted to a discussion of the

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8. The eighth part of the paper is devoted to a discussion of the

conclusions of the paper.